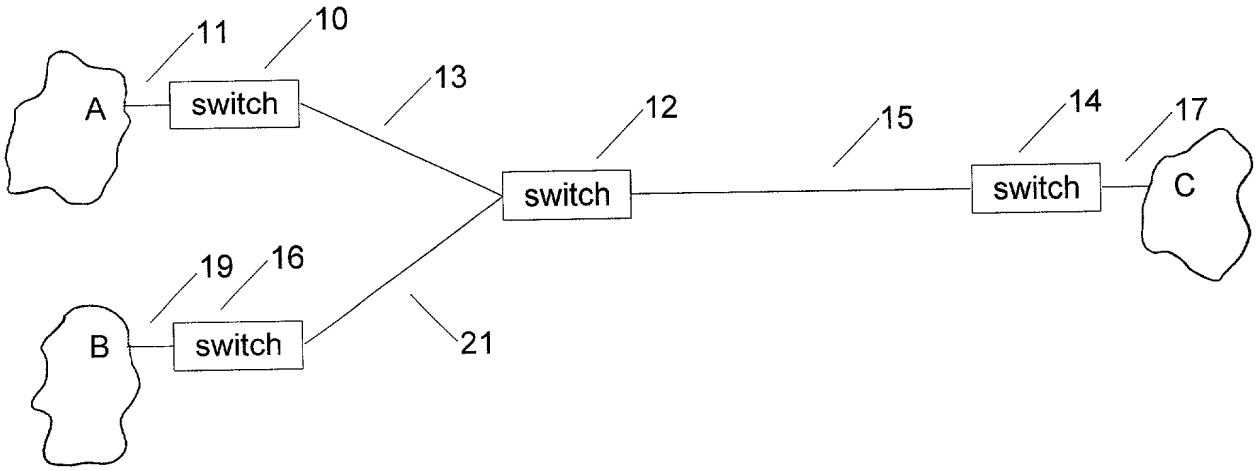

Figure 1

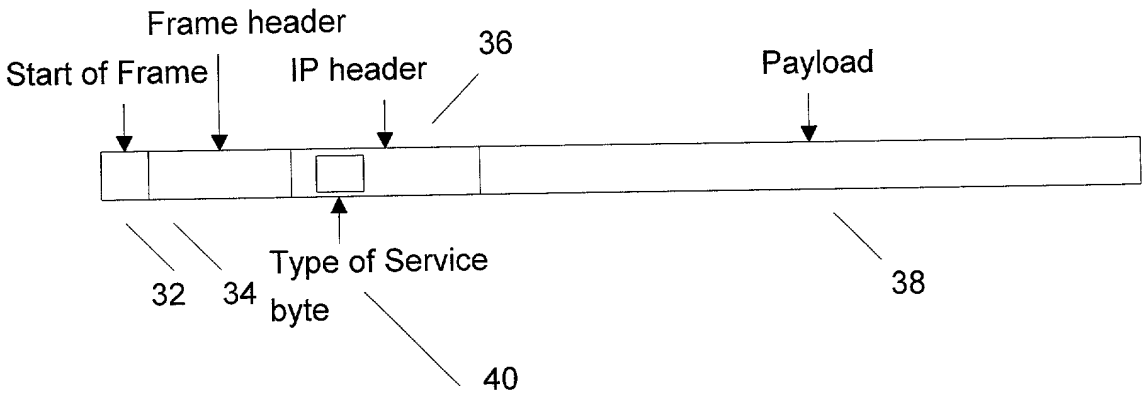
30
Frame header
Start of Frame
IP header
36
Payload
32
34
Type of Service
byte
38
40

Figure 2

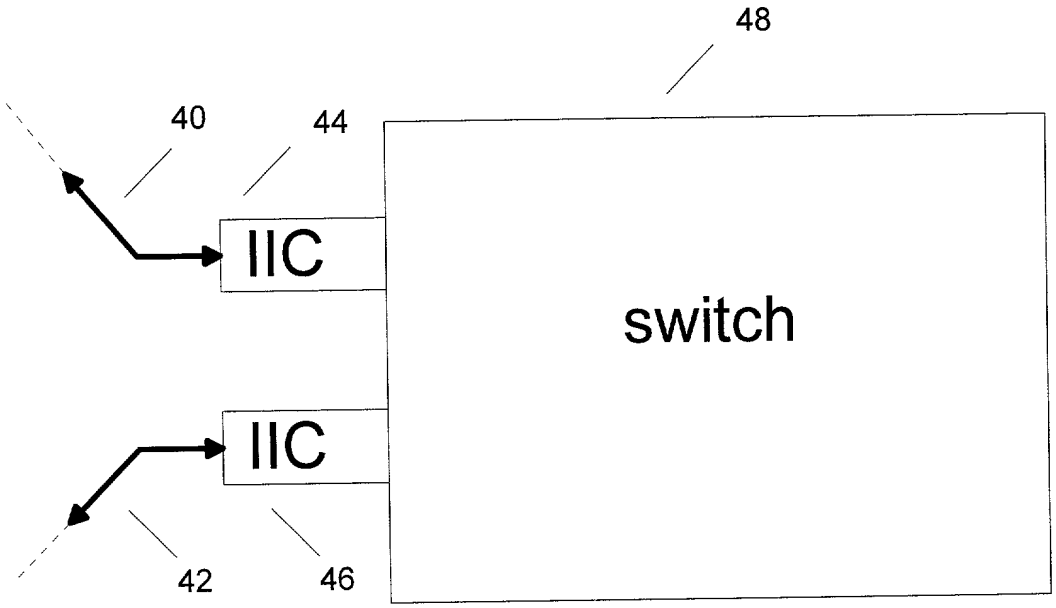

Figure 3

Docket # RAL920000117US1

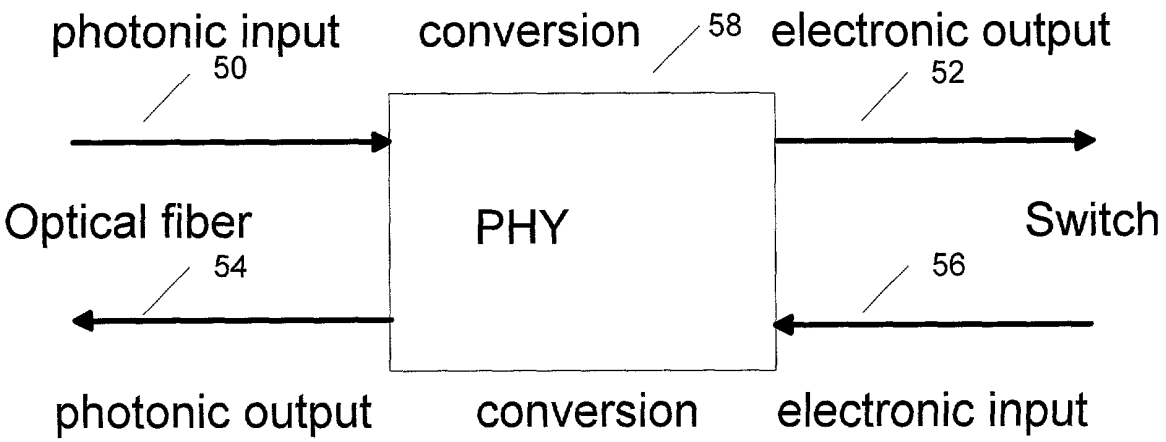
photonic input
conversion
58
electronic output
50
52
Optical fiber
PHY
Switch
54
56
photonic output
conversion
electronic input

Figure 4

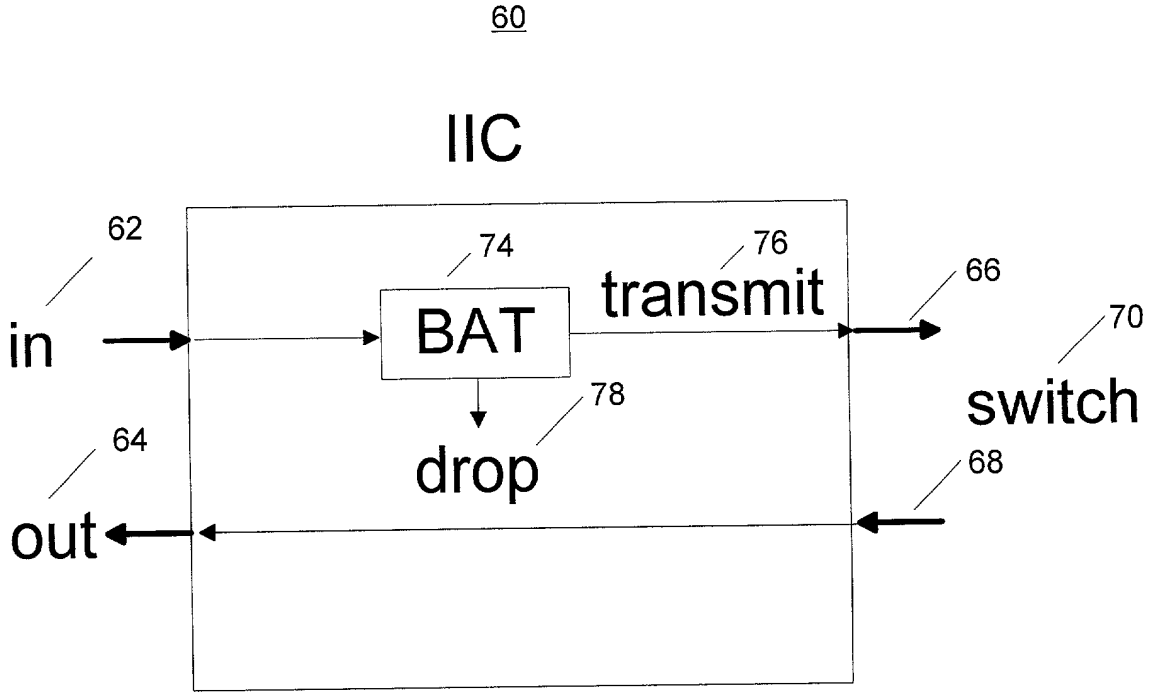

Figure 5

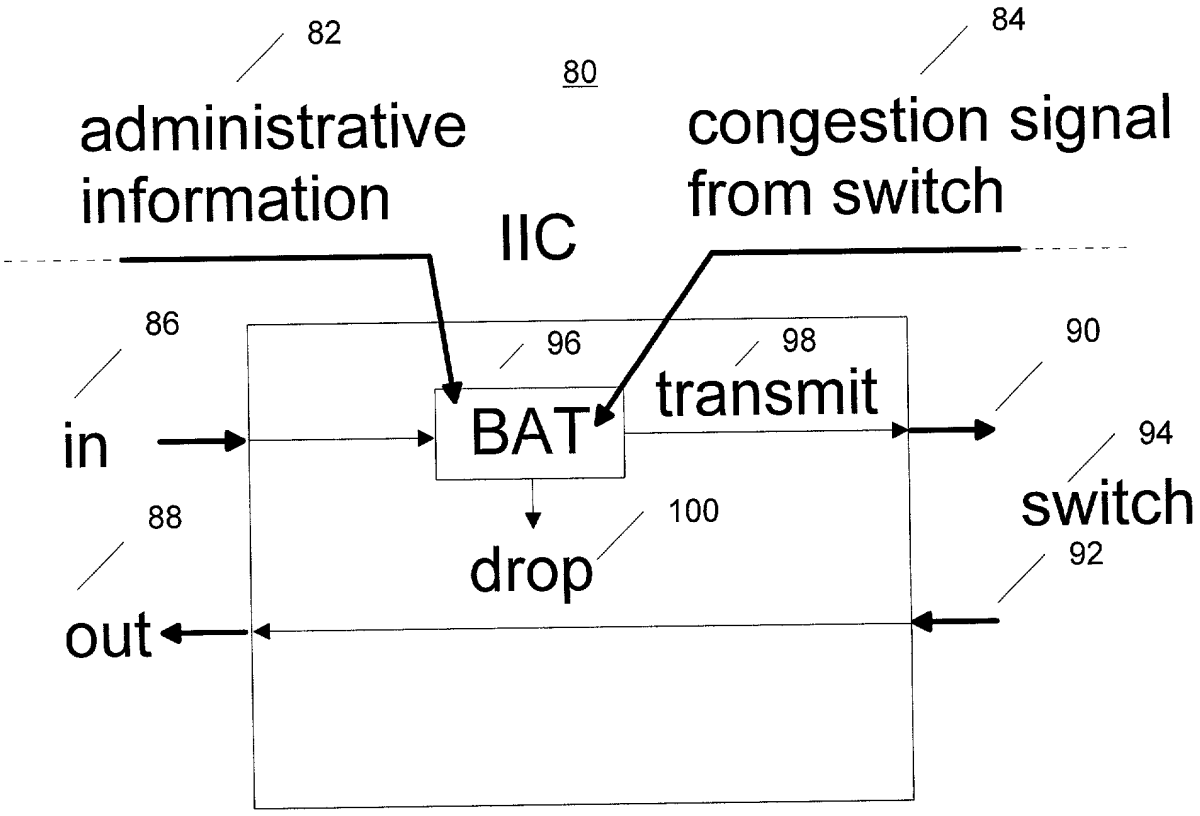
82
84
80
administrative information
congestion signal from switch
IIC
86
96
98
90
in
BAT
transmit
94
switch
88
100
drop
92
out

Figure 6

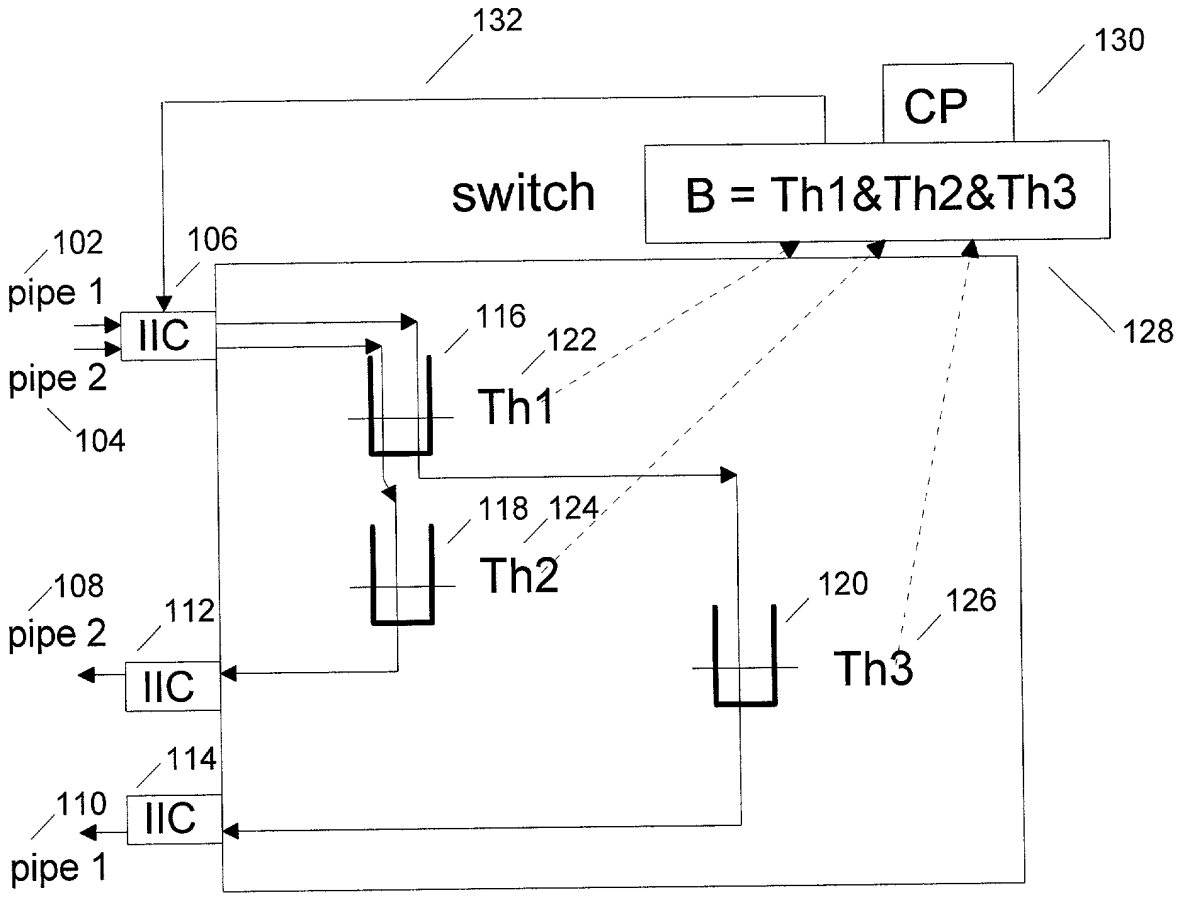
132
130
CP
switch
B = Th1&Th2&Th3
102
106
pipe 1
IIC
116
122
128
pipe 2
Th1
104
118
124
Th2
108
112
120
126
pipe 2
IIC
Th3
114
110
IIC
pipe 1

Figure 7

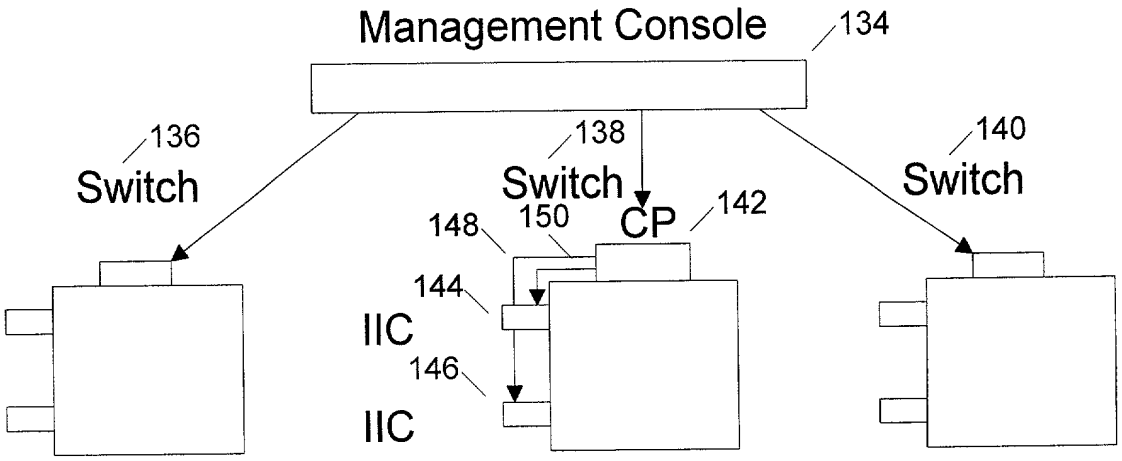
Management Console
134
136
Switch
138
Switch
140
Switch
142
CP
148
150
144
IIC
146
IIC

Figure 8

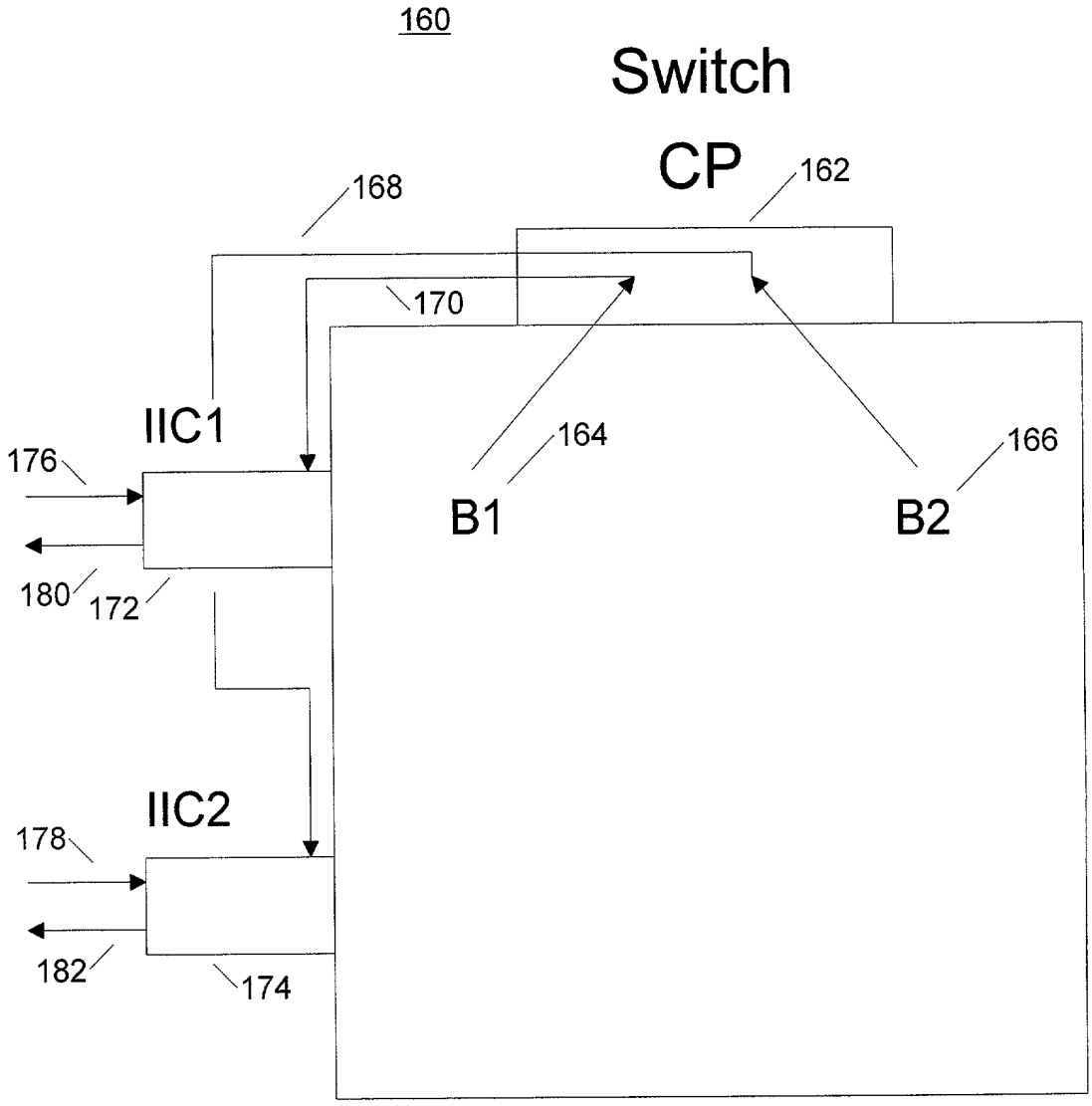
160
Switch
CP
162
168
170
IIC1
176
164
166
B1
B2
180
172
IIC2
178
182
174

Figure 9

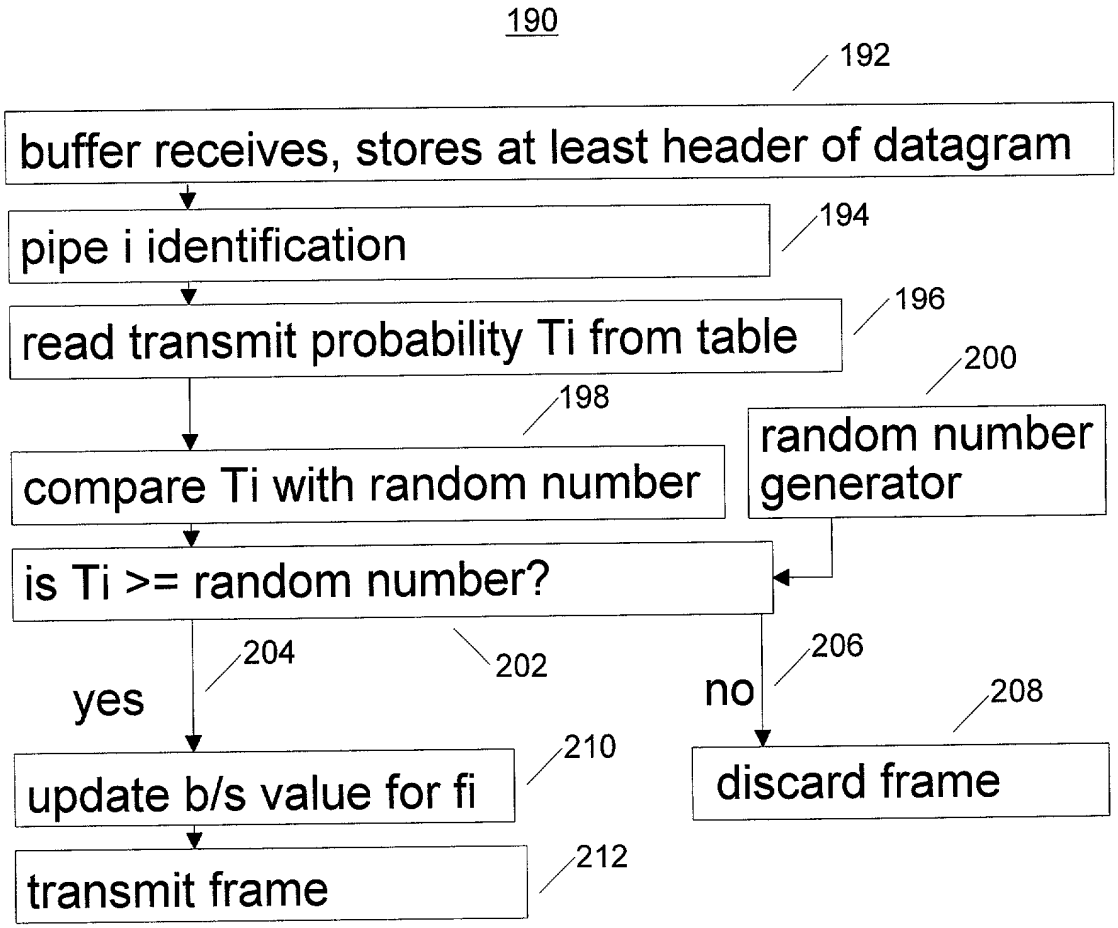
190
192
buffer receives, stores at least header of datagram
pipe i identification
194
read transmit probability Ti from table
196
200
198
random number generator
compare Ti with random number
is Ti >= random number?
204
202
206
yes
no
208
210
update b/s value for fi
discard frame
transmit frame
212

Figure 10

IIC

Update transmit probability table

Timer awakens program with period Dt

Fetch B, E values from registers

Update E and store

For i = 1,..., N fetch fi, Ci, Di, Ti values from registers

For i = 1,..., N update Ti and store in table of Ti values

patent-drawing

Figure 11

BAT flow control refreshes transmit fractions Ti for pipes in a table.

Timer with period Dt awakens BAT flow control.

New transmit fractions computed per pipe.

Results stored in a table.

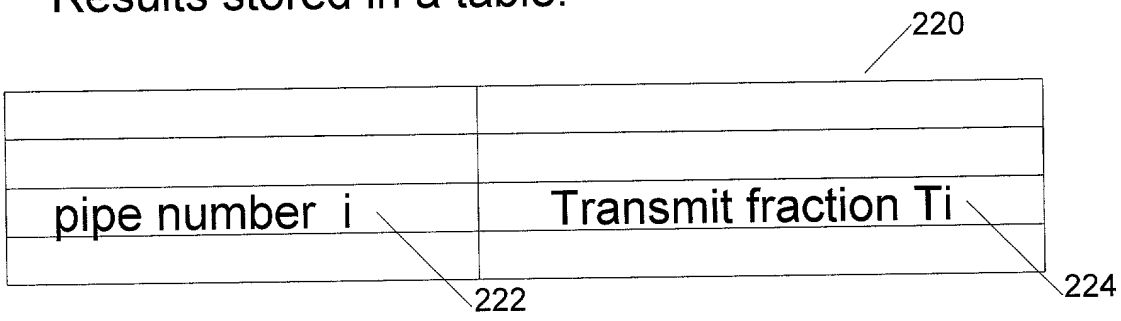

Figure 12

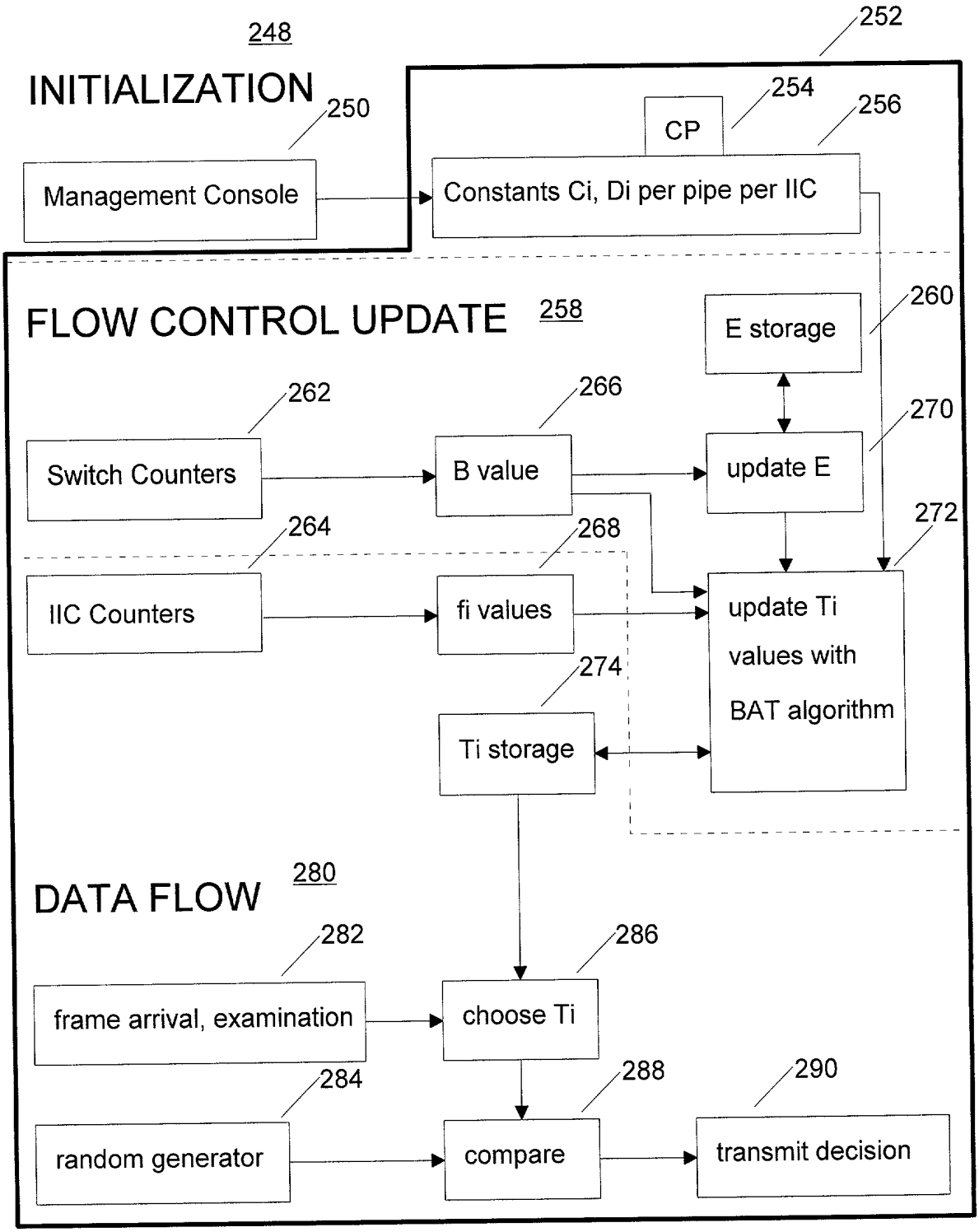
248
INITIALIZATION
250
252
CP
254
256
Management Console
Constants Ci, Di per pipe per IIC
FLOW CONTROL UPDATE
258
E storage
260
262
266
270
Switch Counters
B value
update E
264
268
272
IIC Counters
fi values
update Ti values with BAT algorithm
274
Ti storage
DATA FLOW
280
282
286
frame arrival, examination
choose Ti
284
288
290
random generator
compare
transmit decision

Figure 13

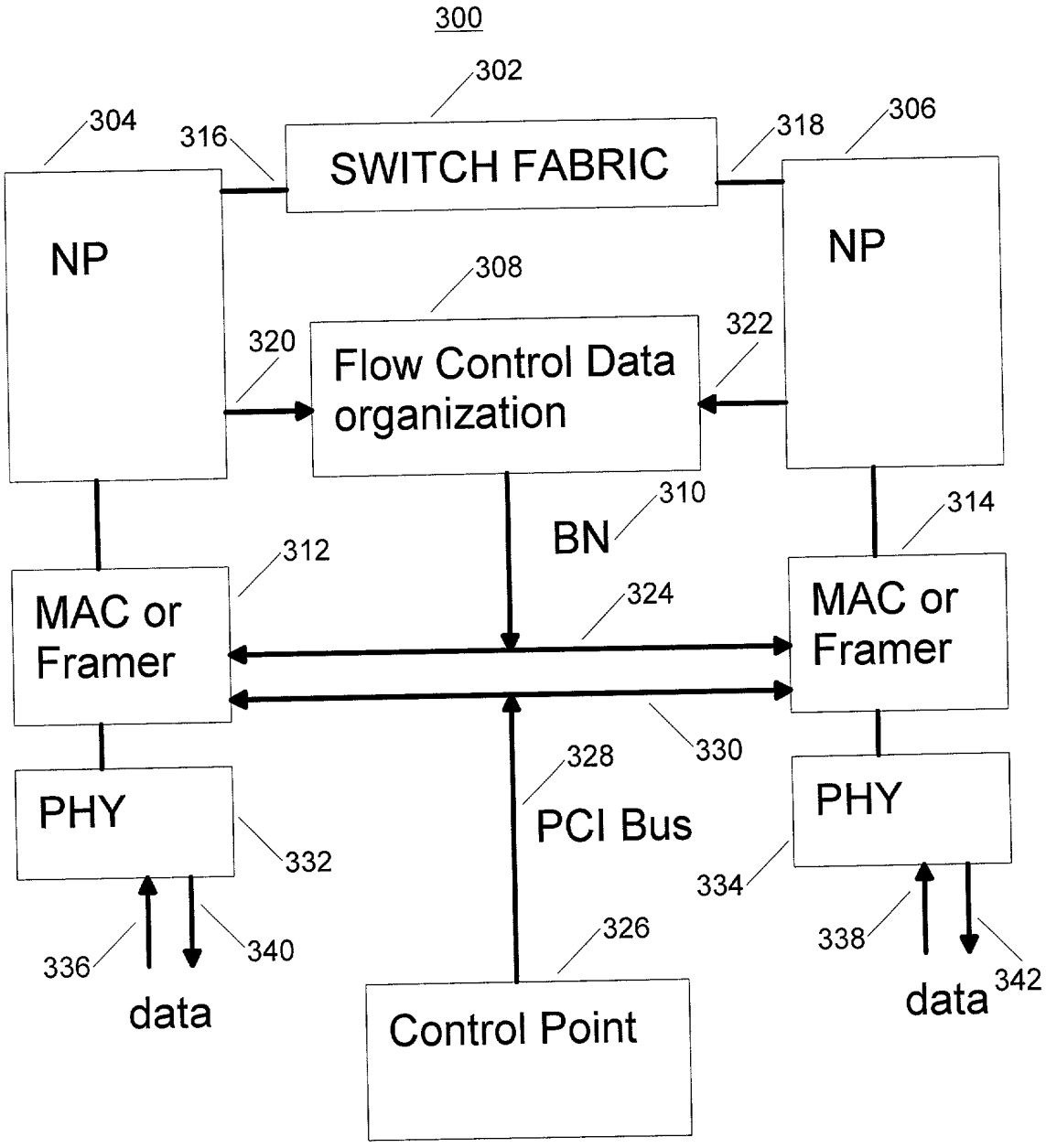
300
302
304
316
SWITCH FABRIC
318
306
NP
NP
308
320
Flow Control Data organization
322
BN
310
314
312
MAC or Framer
324
MAC or Framer
328
330
PHY
PCI Bus
PHY
332
334
336
340
326
338
342
data
Control Point
data

Figure 14